

	L #	Hits	Search Text	DBs	Time Stamp
1	L1	2321	(427/528,529,530,531,576,577).CCLS.	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 08:58
2	L2	355	(204/192.16).CCLS.	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 08:58
3	L3	2614	1 or 2	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 09:13
4	L4	1220	3 and(wear resistant erosion corrosion multilayer multi adj layer)	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 09:16
5	L5	1204	3 and(Ti titanium Zr zirconium TiN ZrN TiB ZrB)	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 09:18

09/700,473

	L #	Hits	Search Text	DBs	Time Stamp
6	L6	1664	4 or 5	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/07/15 09:19

(L6) #18 6,372,303 Burger et al  
alternat C & Si individual layers  
wear-resist & friction reducing

#61 too slow

6 and ((metal metallic steel nickel Ni Titanium Ti alloy) near 5 (substrate  
workpiece piece article object surface component)) ⇒ 1151 hits

6 and ((ion) <sup>with</sup> ~~near~~ 3 (mix mixing implant<sup>ed</sup> implantation)) ⇒ 304 hits

748 ⇒ 235 hits #19

#16 6,171,659 (Brunde et al) - sub-magnet metal, dep. metal & Ramanlypt <sup>→</sup> TiN  
ZrN...

#22 6,083,876 (Vesnovac et al) - implant/dep/implant <sup>←</sup> but all same in  
seeds <sup>↑</sup> intermixed layer

#25 6,054,185 (Inspektor) (D) Ref. to specific coating scheme Fig 1+2 → base adhesion layer 38 = Ti (or Zr)  
sub/Ti/B2/BiN/C/BN

#67 5,593,798 (Muller et al) (B) Use of ion implant... <sup>externally</sup> mixed metal surf. ly on bulk mat →  
(B) Ion treat... noble gases - chemical mixing method  
(B) Both mixed metal & physical method...

#75 5,458,928 (Kiyama et al) (D) Fig 1 is... <sup>Sub. 3-Ni</sup> <sup>drop series 4 (Er) = N<sup>+</sup></sup>  
(D) Although @ abn exp. ZrN & Er <sup>→</sup> Sinter resists w/ Ti → TiN

#93 5,246,571 (Oubata et al) Fig. 1 - Backgr 1

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Step at #20 - 6,406,760

Fast Search - JSK 7/15/02

- (L9) (#111) 5013,419 (Rickaby et al) (D) The general procedure ... sub control of Ti ... or TiN  
 $TiN \leftarrow R_{\text{gas}} N_2$
- (#113) 4,992,153 (Bergmann et al) - adhesion forming layers, ClS/cut-deps  
 $R_{\text{gas}}$  sputtering
- (#114) 4,990,233 (Hahn) (D) Hunches values 10 ... apply desirability and  $(Ti)$   
 $(TiO_2)$   
 ... we start that ion imp. can cause alloy between 2 persons sub,  
 (D) Also, what ion imp. pref. app. ... other words - but more wear part  
 (D) The improved ch. ... ion imp.  $\Rightarrow$  surface alloy, gradual comp
- (#117) 4,915,746 (Welsh) Front Fig. multiple metal layers dep & implant @ of (montages, etc) before another dep.  
 $ion$
- (#130) 4,762,756 (Bergmann et al) (B) The depth of distribution, are variation possible ...  
 combine of Ti & N (D) Formed part of ... steel ... not let, ... Pd from STIN ...  
 $N_2 + Ar$
- (#132) 4,759,948 (Hashimoto et al) Abs - co-dep. - low & high energy beams - ions at surface  
 (D) Concerns species of ions - inert - Ar, ...  $N_2$ , O for subsequent dep ... TiN film  
 Ex. 4 (cont'd) TiN on Al/Si Alloy
- (#136) 4,727,905 (Zhed et al) Abs - wear resist entry of interstitial plasma - are comp Ti, The use of  
 (D) A process for ... Ti dep & Fe Ti alloys form at surface  
 (D) Then the bias voltage  $\downarrow$  ...  $N_2 \Rightarrow TiN$
- (#137) 4,724,016 (Anthony) - ion imp ( $N_2$  ...) of (Zr + its alloys)  
 $Sub$
- (#140) 4,697,325 (Kamigaito et al) use ion irradi to join metal & ceramic parts  
 (C) as Kobayashi et al 4,402,954
- (#142) 4,683,149 (Suzuki et al) Fig. Front  $Ar$  ion / dep / ion imp / dep
- (#147) 4,634,600 (Shimizu et al) Abs fig simultaneous metal dep w/ ion imp (metal erosion)  
 (D) In order to overcome ... TiN coat ...
- (#188) 3,915,757 (Engel et al) Abs - ion implant through oxide onto sub, since  $Ar \Rightarrow$  high temp